ANX-PR/CL/001-01

LEARNING GUIDE

SUBJECT

53000689 - Circular Supply Chains

DEGREE PROGRAMME

05BD - Master Universitario En Ingenieria De La Organizacion

ACADEMIC YEAR & SEMESTER

2021/22 - Semester 1

Index

Learning guide

1. Description

1.1. Subject details

Name of the subject	53000689 - Circular Supply Chains
No of credits	3 ECTS
Type	Optional
Academic year ot the programme	Second year
Semester of tuition	Semester 3
Tuition period	September-January
Tuition languages	English
Degree programme	05BD - Master Universitario en Ingenieria de la Organizacion
Centre	05 - Escuela Tecnica Superior De Ingenieros Industriales
Academic year	2021-22

2. Faculty

2.1. Faculty members with subject teaching role

Name and surname	Office/Room	Email	Tutoring hours *
Ruth Carrasco Gallego (Subject coordinator)		ruth.carrasco@upm.es	- -

* The tutoring schedule is indicative and subject to possible changes. Please check tutoring times with the faculty member in charge.

3. Skills and learning outcomes *

3.1. Skills to be learned

CB06 - Poseer y comprender conocimientos que aporten una base u oportunidad de ser originales en el desarrollo y/o aplicación de ideas, a menudo en un contexto de investigación

CE05 - Analizar y comprender las implicaciones estratégicas y el potencial disruptivo de las nuevas tecnologías digitales para las organizaciones y modelos de negocio

CE08 - Conocer y aplicar los conceptos y técnicas actuales para la gestión del área productiva y logística de las organizaciones

CG04 - Comprender las relaciones entre la estrategia y el diseño de una organización, sus condiciones de funcionamiento y las características del entorno económico, político, normativo, social, tecnológico y medioambiental en que se desenvuelve

CT08 - Entiende los impactos. Educación amplia necesaria para entender el impacto de las soluciones ingenieriles en un contexto social global

CT12 - Es bilingüe. Capacidad de trabajar en un entorno bilingüe (inglés/español)

CT14 - Idea. Creatividad

3.2. Learning outcomes

RA23 - Modelar estructuras de redes de suministro complejas, identificando las actividades productivas y logísticas que la integran y las relaciones existentes entre las organizaciones

RA24 - Identificar las alternativas estratégicas existentes para el diseño y posterior gestión de redes de suministro

RA51 - Analizar y evaluar las políticas de Responsabilidad Social Corporativa desde el conocimiento de los aspectos fundamentales de la misma

RA55 - Entender los aspectos claves del diseño de producto, su ciclo de vida, los programas de comunicación, la estrategia de precios y la promoción.

RA25 - Enumerar, seleccionar y aplicar herramientas orientadas a la gestión de riesgos en redes de suministro complejas

RA22 - Diseñar y analizar la cadena de valor o red de suministro como un sistema complejo, no lineal y dinámico

* The Learning Guides should reflect the Skills and Learning Outcomes in the same way as indicated in the Degree Verification Memory. For this reason, they have not been translated into English and appear in Spanish.

4. Brief description of the subject and syllabus

4.1. Brief description of the subject

This is the first year this course will be offered. This course is one of the first elements towards the creation of an EELISA community on Circular and Regenerative Economy and it is closely linked with the Circular Campus UPM Innovation community

4.2. Syllabus

1. The path towards a regenerative economy: an integrated framework. From reverse logistics to closed-loop supply chains. Industrial symbiosis.

2. Basics of circularity

   2.1. Cradle-To-Cradle: technosphere and biosphere

   2.2. Product recovery options in a circular supply chain (technosphere): reuse/share; repair; refurbish; remanufacture; cannibalization; recycling. Waste Management

3. Extended Producer Responsibility (EPR) policies and Producer Responsibility Organizations (PROs). Closing the loop by industries/sectors/value networks:

   3.1. packaging and packaging waste

   3.2. end-of-life vehicles (ELV)

   3.3. waste electrical and electronic equipment (WEEE)

   3.4. batteries

   3.5. others (non regulated sectors - yet- at EU level: textile, furniture, types, oil, ...)

4. Servitization, sharing and product-service systems (PSS). Sharing economy and function-based economy

5. Digitalization and circularity: technology for closing the loop

6. Rethinking products, services and business models: circular design and the circular business model canvas

7. Circular economy metrics

8. Advanced topics in circular and regenerative economy

5. Schedule

5.1. Subject schedule*

Week	Face-to-face classroom activities	Face-to-face laboratory activities	Distant / On-line	Assessment activities
1	Duration: 01:00 Lecture **Practical session: case study, class dynamics, research project, ...** Duration: 01:00 Cooperative activities			
2	Duration: 01:00 Lecture **Practical session: case study, class dynamics, research project, ...** Duration: 01:00 Cooperative activities			
3	Duration: 01:00 Lecture **Practical session: case study, class dynamics, research project, ...** Duration: 01:00 Cooperative activities			
4	Duration: 01:00 Lecture **Practical session: case study, class dynamics, research project, ...** Duration: 01:00 Cooperative activities			
5	Duration: 01:00 Lecture **Practical session: case study, class dynamics, research project, ...** Duration: 01:00 Cooperative activities			
6	Duration: 01:00 Lecture **Practical session: case study, class dynamics, research project, ...** Duration: 01:00 Cooperative activities			

7	Duration: 01:00 Lecture **Practical session: case study, class dynamics, research project, ...** Duration: 01:00 Cooperative activities			
8	Duration: 01:00 Lecture **Practical session: case study, class dynamics, research project, ...** Duration: 01:00 Cooperative activities			
9	Duration: 01:00 Lecture **Practical session: case study, class dynamics, research project, ...** Duration: 01:00 Cooperative activities			
10	Duration: 01:00 Lecture **Practical session: case study, class dynamics, research project, ...** Duration: 01:00 Cooperative activities			
11	Duration: 01:00 Lecture **Practical session: case study, class dynamics, research project, ...** Duration: 01:00 Cooperative activities			
12	Duration: 01:00 Lecture **Practical session: case study, class dynamics, research project, ...** Duration: 01:00 Cooperative activities			
13	Duration: 01:00 Lecture **Practical session: case study, class dynamics, research project, ...** Duration: 01:00 Cooperative activities			

14	**Practical session: case study, class dynamics, research project, ...** Duration: 01:00 Cooperative activities			**PEC: exam for continuous evaluation students** Written test Continuous assessment Presential Duration: 01:00 **Practical work delivery** Other assessment Continuous assessment Not Presential Duration: 00:01
15				**Final exam** Written test Final examination Presential Duration: 02:00
16				
17				**Re-sit exam** Written test Continuous assessment and final examination Presential Duration: 02:00

Depending on the programme study plan, total values will be calculated according to the ECTS credit unit as 26/27 hours of student face-to-face contact and independent study time.

* The schedule is based on an a priori planning of the subject; it might be modified during the academic year, especially considering the COVID19 evolution.

6. Activities and assessment criteria

6.1. Assessment activities

6.1.1. Continuous assessment

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
14	PEC: exam for continuous evaluation students	Written test	Face-to-face	01:00	50%	3 / 10	CE05 CE08 CT12 CT08 CG04
14	Practical work delivery	Other assessment	No Presential	00:01	50%	3 / 10	CE05 CT14 CE08 CB06 CG04 CT12 CT08
17	Re-sit exam	Written test	Face-to-face	02:00	100%	5 / 10	CE08 CB06 CE05 CT14 CG04 CT12 CT08

6.1.2. Final examination

Week	Description	Modality	Type	Duration	Weight	Minimum grade	Evaluated skills
15	Final exam	Written test	Face-to-face	02:00	100%	5 / 10	CE05 CT14 CE08 CB06 CG04 CT12 CT08
17	Re-sit exam	Written test	Face-to-face	02:00	100%	5 / 10	CE08 CB06 CE05 CT14 CG04 CT12 CT08

6.1.3. Referred (re-sit) examination

No se ha definido la evaluación extraordinaria.

6.2. Assessment criteria

For continuous evaluation students: 50% exam and 50% practical work during the course (including case studies, group dynamics and presentations, research projects, etc.). This is the evaluation by default and requires attending (or synchronous connection) to some practical clases to be announced on the first course session.

Students willing to follow a final exam evaluation are required to indicate this choice in Moodle before Sept 17th.

7. Teaching resources

7.1. Teaching resources for the subject

Name	Type	Notes
Moodle	Web resource	List of bibliography under construction

8. Other information

8.1. Other information about the subject

ACADEMIC HONOUR CODE

Please refer to the honour code at ETSI Industriales**.**

CONTRIBUTION TO THE SDGs (SUSTAINABLE DEVELOPMENT GOALS)

This course is directly linked to SDG 12, Sustainable Production and Consumption, and most of its goals and indicators.

PLATFORMS

If needed, synchronous online face-to-face sessions (instead of physical classes) will take place in Zoom, in

sessions previously created in the Moodle site of the course.

Office hours will take place in MS Teams.